Workshop Notes

International Workshop

"What can FCA do for Artificial Intelligence?"

FCA4AI

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Editors

Sergei O. Kuznetsov (NRU HSE Moscow)

Amedeo Napoli (LORIA Nancy)

Sebastian Rudolph (TU Dresden)

http://fca4ai.hse.ru/2015/

Preface

The three preceding editions of the FCA4AI Workshop showed that many researchers working in Artificial Intelligence are deeply interested by a well-founded method for classification and mining such as Formal Concept Analysis (see `http://www.fca4ai.hse.ru/`). The first edition of FCA4AI was co-located with ECAI 2012 in Montpellier and published as `http://ceur-ws.org/Vol-939/`, the second edition was co-located with IJCAI 2013 in Beijing and published as `http://ceur-ws.org/Vol-1058/`, and finally the third edition was co-located with ECAI 2014 in Prague and published as `http://ceur-ws.org/Vol-1257/`. Based on that, we decided to continue the series and we took the chance to organize a new edition of the workshop in Buenos Aires at the IJCAI 2015 Conference. This year, the workshop has again attracted many different researchers working on actual and important topics, e.g. recommendation, linked data, classification, biclustering, pattern mining, ontology design, and various applications. This shows the diversity and the richness of the relations between FCA and AI. Moreover, this is a good sign for the future and especially for young researchers that are at the moment working in this area or who will do.

Formal Concept Analysis (FCA) is a mathematically well-founded theory aimed at data analysis and classification. FCA allows one to build a concept lattice and a system of dependencies (implications) which can be used for many AI needs, e.g. knowledge discovery, learning, knowledge representation, reasoning, ontology engineering, as well as information retrieval and text processing. As we can see, there are many "natural links" between FCA and AI.

Recent years have been witnessing increased scientific activity around FCA, in particular a strand of work emerged that is aimed at extending the possibilities of FCA w.r.t. knowledge processing, such as work on pattern structures and relational context analysis. These extensions are aimed at allowing FCA to deal with more complex than just binary data, both from the data analysis and knowledge discovery points of view and as well from the knowledge representation point of view, including, e.g., ontology engineering.

All these investigations provide new possibilities for AI activities in the framework of FCA. Accordingly, in this workshop, we are interested in two main issues:

- How can FCA support AI activities such as knowledge processing (knowledge discovery, knowledge representation and reasoning), learning (clustering, pattern and data mining), natural language processing, and information retrieval.
- How can FCA be extended in order to help AI researchers to solve new and complex problems in their domains.

The workshop is dedicated to discuss such issues. This year, the papers submitted to the workshop were carefully peer-reviewed by three members of the program committee and 10 papers with the highest scores were selected. We thank all the PC members for their reviews and all the authors for their contributions.

The Workshop Chairs

Sergei O. Kuznetsov
National Research University, Higher Schools of Economics, Moscow, Russia

Amedeo Napoli
LORIA (CNRS – Inria Nancy Grand Est – Université de Lorraine), Vandoeuvre les Nancy, France

Sebastian Rudolph
Technische Universität Dresden, Germany

Program Committee

Mathieu D'Aquin (Open University, UK)

Gabriela Arevalo (Universidad Nacional de Quilmes, Argentina)

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Florence Le Ber, Université de Strasbourg, France

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Rokia Missaoui (Université du Québec en Outaouais, Ottawa, Canada)

Sergei A. Obiedkov (NRU Higher School of Economics, Moscow, Russia)

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Chedy Raïssi (Inria/LORIA Nancy, France)

Artem Revenko, Technische Universität Dresden, Germany

Christian Săcărea (Babes-Bolyai University, Cluj-Napoca, Romania)

Baris Sertkaya (SAP Dresden, Germany)

Henry Soldano (Université de Paris-Nord, France)

Laszlo Szathmary, University of Debrecen, Hungary

Petko Valtchev (Université du Québec à Montréal, Montréal, Canada)

Renato Vimiero (UFPE Recife, Brazil)

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